

| APPLICABLE STANDARD                                                                                                                                                                                               |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------|
| RATING                                                                                                                                                                                                            | OPERATING TEMPERATURE RANGE | -35°C TO +85°C (NOTE1)                                                                                                                                                                                                                                                                                                                                       | STORAGE TEMPERATURE RANGE                                                                                                | -10°C TO +60°C (NOTE3)   |                  |
|                                                                                                                                                                                                                   | OPERATING HUMIDITY RANGE    | 40% TO 80% (NOTE2)                                                                                                                                                                                                                                                                                                                                           | STORAGE HUMIDITY RANGE                                                                                                   | 40% TO 70% (NOTE3)       |                  |
|                                                                                                                                                                                                                   | VOLTAGE                     | 100 V AC (DC)                                                                                                                                                                                                                                                                                                                                                | APPLICABLE CONNECTOR                                                                                                     | DF19 (G) → *S-1# (NOTE4) |                  |
|                                                                                                                                                                                                                   | CURRENT                     | AWG28: 1A/pin<br>AWG30: 0.9A/pin<br>AWG32: 0.8A/pin                                                                                                                                                                                                                                                                                                          |                                                                                                                          |                          |                  |
| SPECIFICATIONS                                                                                                                                                                                                    |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| ITEM                                                                                                                                                                                                              |                             | TEST METHOD                                                                                                                                                                                                                                                                                                                                                  | REQUIREMENTS                                                                                                             | QT                       | AT               |
| CONSTRUCTION                                                                                                                                                                                                      |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| GENERAL EXAMINATION                                                                                                                                                                                               |                             | VISUALLY AND BY MEASURING INSTRUMENT.                                                                                                                                                                                                                                                                                                                        | ACCORDING TO DRAWING.                                                                                                    | X                        | X                |
| MARKING                                                                                                                                                                                                           |                             | CONFIRMED VISUALLY.                                                                                                                                                                                                                                                                                                                                          |                                                                                                                          | X                        | X                |
| ELECTRIC CHARACTERISTICS                                                                                                                                                                                          |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| CONTACT RESISTANCE                                                                                                                                                                                                |                             | AC 20mV, 1mA (DC OR 1000 Hz).                                                                                                                                                                                                                                                                                                                                | 30 mΩ MAX.                                                                                                               | X                        | —                |
| INSULATION RESISTANCE                                                                                                                                                                                             |                             | 100 V DC.                                                                                                                                                                                                                                                                                                                                                    | 500 MΩ MIN.                                                                                                              | X                        | —                |
| VOLTAGE PROOF                                                                                                                                                                                                     |                             | 300 V AC FOR 1 min.                                                                                                                                                                                                                                                                                                                                          | NO FLASHOVER OR BREAKDOWN.                                                                                               | X                        | —                |
| MECHANICAL CHARACTERISTICS                                                                                                                                                                                        |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| MECHANICAL OPERATION                                                                                                                                                                                              |                             | 30 TIMES INSERTIONS AND EXTRACTIONS.                                                                                                                                                                                                                                                                                                                         | 1) CONTACT RESISTANCE: 30 mΩ MAX.<br>2) NO DAMAGE, CRACK OR LOOSENESS OF PARTS.                                          | X                        | —                |
| VIBRATION                                                                                                                                                                                                         |                             | FREQUENCY 10 TO 55 Hz, SINGLE AMPLITUDE 0.75 mm, AT 10 CYCLES FOR 3 DIRECTIONS.                                                                                                                                                                                                                                                                              | 1) NO ELECTRICAL DISCONTINUITY OF 1 μs.<br>2) NO DAMAGE, CRACK OR LOOSENESS OF PARTS.                                    | X                        | —                |
| SHOCK                                                                                                                                                                                                             |                             | 490 m/s <sup>2</sup> DURATION OF PULSE 11 ms AT 3 TIMES FOR 3 DIRECTIONS.                                                                                                                                                                                                                                                                                    |                                                                                                                          | X                        | —                |
| ENVIRONMENTAL CHARACTERISTICS                                                                                                                                                                                     |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| RAPID CHANGE OF TEMPERATURE                                                                                                                                                                                       |                             | TEMPERATURE -55→5 TO 35→+85 →5 TO 35 °C<br>TIME 30→2 TO 3 → 30 →2 TO 3 min<br>UNDER 5 CYCLES.                                                                                                                                                                                                                                                                | 1) CONTACT RESISTANCE: 30 mΩ MAX.<br>2) INSULATION RESISTANCE: 500 MΩ MIN.<br>3) NO DAMAGE, CRACK OR LOOSENESS OF PARTS. | X                        | —                |
| DAMP HEAT (STEADY STATE)                                                                                                                                                                                          |                             | EXPOSED AT 40±2 °C, 90 TO 95 %, 96 h.                                                                                                                                                                                                                                                                                                                        |                                                                                                                          | X                        | —                |
| RESISTANCE TO SOLDERING HEAT                                                                                                                                                                                      |                             | (1) REFLOW SOLDERING<br>«REFLOW AREA»<br>MAX 250°C WITHIN 10 sec<br>MIN 230°C WITHIN 60 sec<br>«PREHEATING AREA»<br>170 °C TO 190 °C 60sec TO 120 sec<br>PUT THROUGH IN REFLOW FUMACE TWICE.<br>LEAVE IN AMBIENT TEMPERATURE AND HUMIDITY FOR 1 HOUR<br>(2) MANUAL SOLDERING<br>SOLDERING IRON TEMPERATURE 350±5 °C,<br>FOR 5±1 sec. NO STRENGTH ON CONTACT. | NO DEFORMATION OF CASE OF EXCESSIVE LOOSENESS OF THE TERMINALS.                                                          | X                        | —                |
| SOLDERABILITY                                                                                                                                                                                                     |                             | SOLDERING TEMPERATURE: 245°C<br>DURATION OF IMMERSION: SOLDERING, FOR 5 sec                                                                                                                                                                                                                                                                                  | A NEW UNIFORM COATING OF SOLDER SHALL COVER MINIMUM OF 95 % OF THE SURFACE BEING IMMersed.                               | X                        | —                |
| REMARKS                                                                                                                                                                                                           |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| NOTE1: INCLUDING THE TEMPERATURE RISE BY CURRENT.                                                                                                                                                                 |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| NOTE2: NO CONDENSING                                                                                                                                                                                              |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| NOTE3: APPLY TO THE CONDITION OF LONGTERM STORAGE FOR UNUSED PRODUCTS BEFORE MOUNTED ON PCB. AFTER MOUNTED ON PCB, OPERATING TEMPERATURE AND HUMIDITY RANGE IS APPLIED FOR INTERIM STORAGE DURING TRANSPORTATION. |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| NOTE4: #=TERMINATION STYLE MARKING.                                                                                                                                                                               |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| (C: CRIMP SOCKET, F: FPC SOCKET, SD: SOCKET FOR FINE COAXIAL CABLES)                                                                                                                                              |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
|                                                                                                                                                                                                                   | COUNT                       | DESCRIPTION OF REVISIONS                                                                                                                                                                                                                                                                                                                                     | DESIGNED                                                                                                                 | CHECKED                  | DATE             |
| ⚠                                                                                                                                                                                                                 |                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                          |                          |                  |
| Unless otherwise specified, refer to IEC 60512.                                                                                                                                                                   |                             |                                                                                                                                                                                                                                                                                                                                                              | APPROVED                                                                                                                 | HS. OKAWA                | 20200313         |
|                                                                                                                                                                                                                   |                             |                                                                                                                                                                                                                                                                                                                                                              | CHECKED                                                                                                                  | TS. KUMAZAWA             | 20200313         |
|                                                                                                                                                                                                                   |                             |                                                                                                                                                                                                                                                                                                                                                              | DESIGNED                                                                                                                 | HK. HAYASHI              | 20200313         |
|                                                                                                                                                                                                                   |                             |                                                                                                                                                                                                                                                                                                                                                              | DRAWN                                                                                                                    | DS. HIROWATARI           | 20200306         |
| Note QT: Qualification Test AT: Assurance Test X: Applicable Test                                                                                                                                                 |                             |                                                                                                                                                                                                                                                                                                                                                              | DRAWING NO.                                                                                                              |                          | ELC-302815-52-00 |
| HRS                                                                                                                                                                                                               | SPECIFICATION SHEET         |                                                                                                                                                                                                                                                                                                                                                              | PART NO.                                                                                                                 | DF19K-**P-1H (52)        |                  |
|                                                                                                                                                                                                                   | HIROSE ELECTRIC CO., LTD.   |                                                                                                                                                                                                                                                                                                                                                              | CODE NO.                                                                                                                 | CL685-                   | ⚠ 1/1            |